Does Metformin Therapy Affect Thyroid Function Tests in Euthyroid Obese Adolescents?

Aysun Ata[1], Hanife Gül Balki[2], Samim Özen[2], Damla Gökşen[2], and Şükran Darcan[2]

[1]Afyonkarahisar Health Sciences University
[2]Ege University

May 9, 2023

Abstract

Background Metformin has been frequently used off-label for childhood obesity besides diabetes. Studies have demonstrated the thyroid-stimulating hormone (TSH) suppressive effect of metformin in patients with a diagnosis of primary hypothyroidism. This study aimed to evaluate free T4 (fT4) and free T3 (fT3) tests and influencing factors in adolescents (TSH) who were on metformin therapy for obesity and insulin resistance and had no diagnosed thyroid disease. Material and Methods A total of 54 patients aged 10-18 years who presented to the Pediatric Endocrinology Outpatient Clinic for overweight between 2017 and 2020 and who were diagnosed with exogenous obesity and insulin resistance based on examinations by excluding hypothyroidism were retrospectively evaluated. Baseline and post-treatment 6-month thyroid function tests, HOMA-IR, and anthropometric measurements were evaluated. Results Of the 54 patients included in the study, 38 (70.4%) were female and 16 (29.6%) were male. the mean time from admission to follow-up was 6.5±2.7 months. There was a moderate negative (inverse) correlation between the change in weight SDS ([?]weight SDS) and the change in fT4 ([?]fT4) of the patients (r=-0.319), and a moderate positive correlation between [?]weight SDS and the change in fT3 value ([?]fT3) (r=0.534) (p=0.035; p=0.027, respectively). A moderate significant positive correlation was found between the change in HOMA-IR ([?]HOMA-IR) and the change in TSH ([?]TSH) (r=0.376; p=0.009).

Hosted file

`metforminunlink.docx` available at https://authorea.com/users/616017/articles/642169-does-metformin-therapy-affect-thyroid-function-tests-in-euthyroid-obese-adolescents

Hosted file

`metformintable.docx` available at https://authorea.com/users/616017/articles/642169-does-metformin-therapy-affect-thyroid-function-tests-in-euthyroid-obese-adolescents